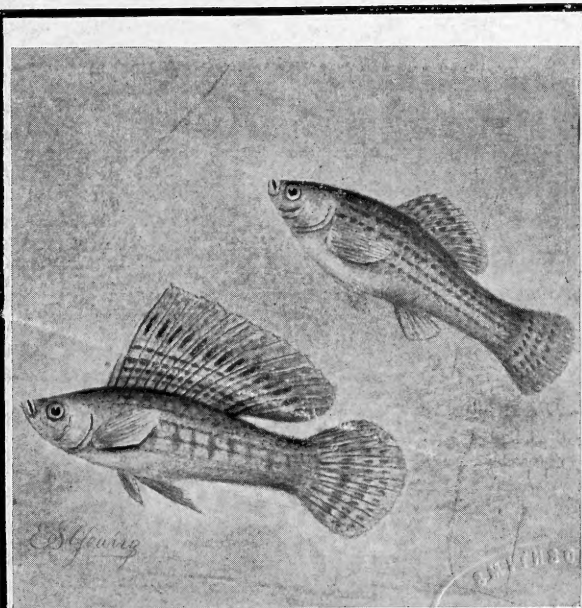


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THE AQUARIUM

ISSUED IN THE INTERESTS
OF THE STUDY, CARE AND
BREEDING OF AQUATIC LIFE



MOLLIENISIA LATIPINNA Lesueur.

Drawing by E. S. Young.

MARCH 1913

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VOL. I

Published at Hammond, Indiana.
BY THE AQUARIUM SOCIETIES
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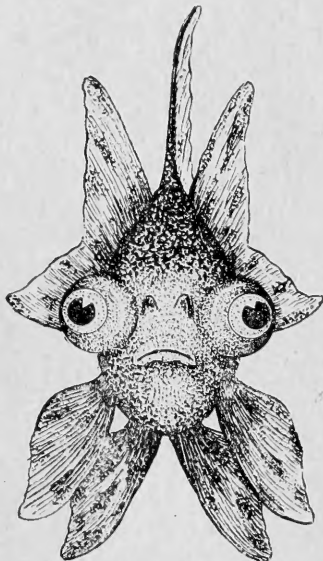
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FANTAIL
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TELESCOPES
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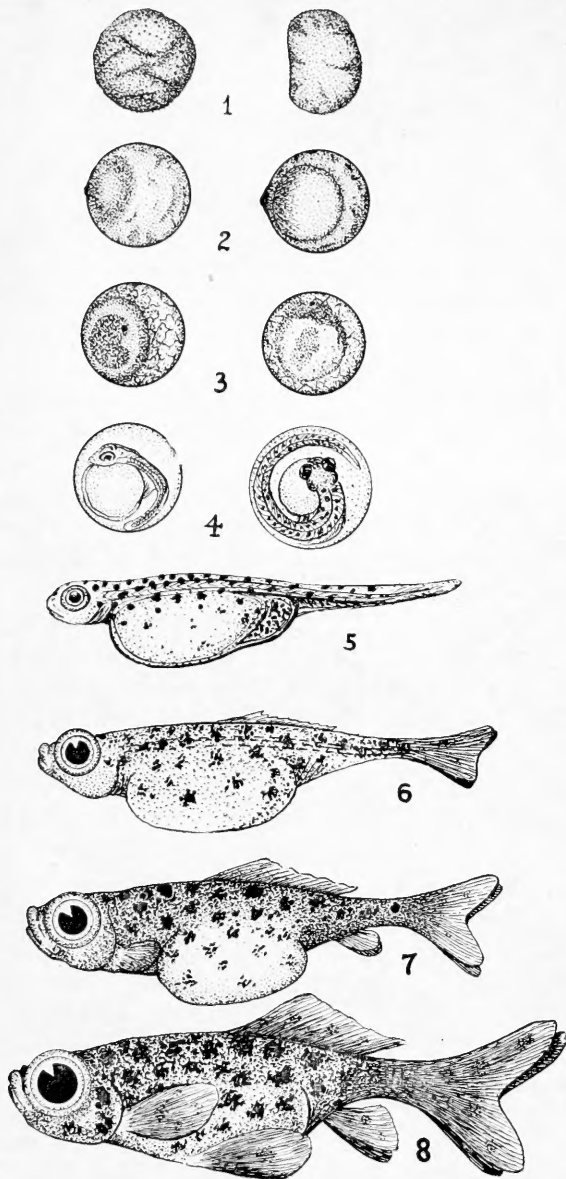
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1. Newly exuded egg, not fecundated, wrinkled and unexpanded surface covered with vesicles. Full and lateral views.

2. Egg, four and ten hours after fecundation, showing germination and formation of membrane.

3. Development of embryo and plasmic processes at edge of membrane 24 and 34 hours after spawning.

4. Development of alevin and yolk-sac, 50 and 58 hours after spawning.

5. Free-swimming alevin attached to the yolk-sac, showing skeleton, partly developed digestive organs and surface colors. Four days old.

6. Alevin five days old; dorsal and caudal fins partly developed.

7. Alevin seven days old; pectoral and anal fins developed.

8. The fully developed Telescope fry, ten days old.

PLATE II
EMBRYOLOGY OF THE GOLDFISH.
FROM GOLDFISH BREEDS AND OTHER AQUARIUM FISHES BY H. T. WOLF
COURTESY OF INNES AND SONS

THE AQUARIUM

VOLUME I

MARCH, 1913

NUMBER 10

Mollienisia latipinna.

C. J. HEEDE, Brooklyn.

WHILE many of the inhabitants of our aquaria have been given more or less appropriate vernacular names, *Mollienisia latipinna*, a live-bearing species of the family CYPRINODONTIDAE, has apparently escaped the attention of the manufacturer of common names. This *Mollienisia* is a native of southern North America, and is said to occur abundantly in its chosen haunts.

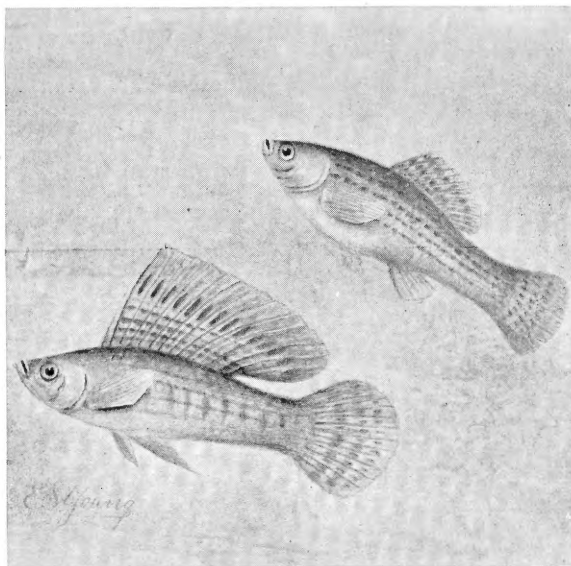
In habits and actions, though not in color, *M. latipinna* resembles the female *Xiphophorus*, but is larger and heavier built. While both sexes are attractive in color, the male is more beautiful, larger, and has an unusually developed dorsal-fin. In length, the males average two and one-half to three inches. Red spots appearing as stripes running from head to tail, cover the whole body. The gill covers have blue markings which are also present on the dorsal-fin and tail of the male. The tail of the male is marked with red. Vertical

stripes cross the lower part of the body. The caudal-fin is round with a short peduncle. When breeding, the colors are most intense, at other times, and in young fish, it is less distinct, though the stripes are always present.

Mollienisia may be readily bred in the aquarium if a temperature of 75 to 80 degrees, Fahrenheit, is maintained. At other times, 70 to 75 degrees is sufficient. This species will bear ten to fifty young, three or four times during the summer. Young females produce a smaller number of fry than those more mature, the number increasing with each successive brood.

The best foods are *Daphnia*, *Cyclops*, raw scraped beef,

clams, etc., but they do fairly well on artificial foods. They are largely vegetarian, however, and do not need so much live food as some other species, such as *Gambusia Holbrooki* or *G. bimaculata*. That they are plant-eating must not be construed to mean that they destroy the plants of the aquarium, except *Alga* and similar fine vegetation.



MOLLIENISIA LATIPINNA Lesueur.

Drawing by E. S. YOUNG.

The fishes when first imported from the south are very sensitive to changes of temperature, shipment, or transference from tank to tank. It is advisable to disturb as little as possible until they have been thoroughly acclimated.

Another *Mollienisia*, *M. formosa*, from Mexico, is a nice aquarium fish, but inferior in color to *M. latipinna*. The body is greenish gray with greenish-yellow cross-stripes; abdominal region, metallic blue; dorsal and caudal fins, dull yellow with dark markings. In contrast to *M. latipinna*, the males are smaller than the females. Breeding habits, food and temperature requirements, the same as *M. latipinna*.

Embryology of the Goldfish.

Plate II.

W. A. POYSER, Hammond, Indiana.

FERTILIZATION, or as it is sometimes called, fecundation, consists of the fusion of two cells. In animals the process is essentially the same in all the classes above the Protozoa. The male and female secrete, one the egg, the other the spermatozoa, the union of which results in the formation of a new individual. In the lower forms of life, the cells may be alike, but in the more developed forms there is considerable difference. The female cell or "egg", is largest and passive, containing nutrient matter for the development of the embryo. The male element, or spermatozoon has the power of locomotion necessary to reach the egg.

The usual type of spermatozoon consists of head, middle piece and tail. Superficially, it resembles a tadpole with an extremely long tail in proportion to the head. It is, of course, microscopic. The spermatozoa are formed in a gland of the male called the testis (vernacularly, in fishes, the milt, as opposed to the roe of the female).

The essential phenomenon in reproduction is the act of impregnation of the

female cell. With goldfish, the male assists the female in the protrusion of the eggs, simultaneously discharging the spermatozoa. Fertilization is accomplished by the entry of a single spermatozoon into an egg. The egg which, before fecundation, was slightly flattened and unexpanded (Fig. 1) now becomes globular. Unfertilized eggs are opaque and whitish in color, soon becoming covered with a fungus, and should be removed. The impregnated eggs are yellowish, becoming darker with the subsequent development of the embryo (Fig. 2). With the entry of the spermatozoon, changes take place in the contents of the egg, completing the process of fertilization and initiating embryonic development.

The differentiation and development of the embryo proceeds rapidly, depending, of course, upon the temperature of the water (Fig. 3). The various stages may be readily observed under the microscope, observations being made frequently. The stage shown by Figure 4 usually proves most interesting to the lay-observer. At this time the alevin is most active within the egg, and is about ready to come forth. It is possible to see the circulation of the blood; to follow the blood corpuscles through the entire body of the alevin, and their return through the gills. When this stage has been reached, the activity of the alevin soon ruptures the egg-walls, thus beginning an independent existence (Fig. 5).

After leaving the egg, the yolk-sac, still attached to the fry, furnishes sustenance for about a week, during which the fins are developed as shown by Figures 5, 6, and 7. The complete absorption of the contents of the sac in ten days to two weeks, finds the fully developed young fish (Fig. 8) foraging for Infusoria, and beginning the battle that results in "the survival of the fittest".

The Aquarium.

A Series of Articles on the Construction, Equipment and Maintenance of Aquaria, and the Breeding of Goldfish.

C. G. B. SCHENK, Milwaukee.

II. Metal-frame Aquaria.

IN the February number we took up the advantages and disadvantages of the all-glass aquarium. In this article we will take up the metal-frame tank with glass sides and ends.

In determining the material we are going to use, we can consider iron, which should be smooth so it can be neatly painted or nickel-plated, brass, polished or nickel-plated, and aluminum. If a nickel-plated frame is wanted, aluminum is the best, as plating may in time wear off, which would make a very unsightly tank.

Supposing you have decided on the material, the next thing to consider is the size. My advice is to make the tank as large as your purse, and the space where the aquarium is to be placed, will allow. In determining the proportions, have the length the largest measurement: the height, two inches greater than the width. I say two inches greater than the width, because, when you have put two or three inches of sand on the bottom, the water depth will not be more than the width. This is as it should be, for while we can make the tank as long and as wide as we wish, the depth must under no circumstance be greater than the width. But we want as much depth as possible for the plants. I will give one set of measurements for a very desirable size aquarium: 24 inches long x 14 inches high x 12 inches wide.

My advice is to have the frame made by some one who has the necessary materials, tools and mechanics. I have had a number of brass frames of the size mentioned made for three dollars

each. By the time you buy the angle brass, and figure the trouble, not to mention a possible outlay for tools, you won't save very much by constructing it yourself. However, for those who prefer to make their own, the proposition is simple. A frame of this size requires no rivets, only soldering of the joints being necessary.

Have the bottom of your tank made of wider surface material than the corner uprights and top. For a frame as mentioned, have the bottom of $1\frac{1}{4}$ inch surface, corners and top of one inch. The purpose of this is to take care of the bottom strain which is much greater than the top and sides. Material one-sixteenth of an inch thick is heavy enough for the size tank above mentioned. Use one-quarter inch plate glass for the sides, ends and bottom. In having the glass cut, the best way is to take the frame to the glazier so he can get all measurements accurate. Be careful against scratches on the glass. When ordering the glass fitted, have the sides go first, the ends next, and the bottom last. Allow one-eighth inch for cement around all measurements.

There are a number of good formulas for cement. I will give three, all of which have stood the test.

1.

1 part white lead (ground in oil)

1 part litharge (dry)

Mix together to make a good working putty.

2.

1 part zinc white (dry)

1 part spar varnish

Mix into good working putty.

3.

1 part litharge (dry)

1 part white lead (dry)

1 part fine sand

$\frac{1}{2}$ part powdered resin

Mix with boiled oil into putty with a little patent dryer.

Now with our frame, glass and cement

all ready, we will proceed to set the glass.

Put plenty of cement all around the frame of one side, after which set a side glass, pressing firmly, but very gently against the cement. After trimming away the cement which you have squeezed out, proceed to put the cement on the second side, then the one end, after which the other end, and finally the bottom. Now put a corner of cement all around the inside. Brace the sides and ends with sticks of wood and allow to set for two or three days. Next, turn the aquarium bottom side up and fill the space between the glass and upper frame with cement. If your work has been well done, your aquarium will be water-tight and should remain so for many years. A good plan is to give the corners on the inside a coat of spar varnish before applying the cement as it helps to stick the cement better to the glass. In this procedure, leave the varnish dry for about twelve hours before putting on the cement, so that the varnish will be sticky.

(To be continued.)

The third article will be on the equipment of the aquarium with sand, plants, etc.

A Cure for Gill Trouble.

HARRY P. PETERS, Philadelphia.

TWO years ago I had gill trouble among my goldfish, and as a result, lost thousands of young. Toward the end of the season, a scientific friend advised me to try the copper solution for a remedy. I did, and with pronounced success. I wanted to try it out more thoroughly last year, but did not have a single case. I submit the formula, hoping that it may be further proved efficient, and the results of the experiments published in *THE AQUARIUM*.

Before this time, no cure for the disease has been known, and as gill trouble kills a hundred times more young goldfish than all other ailments

combined, it would be a tremendous saving to breeders to be able to hold it in check.

Copper is dangerous to the life of fishes and plants, hence care should be exercised not to make the solution too strong, nor to allow the fish to remain in it too long. It will probably be necessary to kill a few fish with an overdose in order to arrive at the proper strength, but as the fish are sure to die if not treated, there is everything to gain and nothing to lose by experimentation. Make a stock solution by dissolving 120 grains of sulphate of copper in a pint of water. For use, take a tablespoonful of the stock solution to a quart of water. Put the fry in the diluted solution, allowing them to remain fifteen minutes to several hours. Return the fish to clean, fresh water and note results.

Observe!

Someone chided Socrates for looking at the ground as he walked. For answer the great man pointed to a field of grain and observed, "Some of those stalks droop, others stand upright." Yes, but —?" "Well, those that droop have grain in them!" The story has come down to us. Socrates lives. The name of the man who rebuked him is forgotten.

The man who walks with head in the clouds does not see the useful things lying about his feet. And it is these close-to-hand things that he must weave into the warp and woof of his fabric if he would make the mantle of success.

Exchange.

A laboratory of natural history is a sanctuary where nothing profane should be tolerated. I feel less agony at improprieties in churches than in a scientific laboratory.—*Louis Agassiz.*

The Hydra.

W. A. POYSER, Hammond, Indiana.

IN his aquaria or tanks the fish breeder may find, attached by its base to the stems of aquatic plants, a very small animal, just large enough to be seen without the aid of a glass, of a pale green or brown color. This is the common hydra, technically *Hydra viridis* (green hydra) or *Hydra fusca* (brown hydra). It possesses a gelatinous, sub-cylindrical body which may undergo various changes of form. One end expands into a foot or disk by which the creature attaches itself, or moves slowly along as its own volition dictates: while a mouth surrounded with five or more tentacles is at the opposite end. These tentacles or feelers are exceedingly contractile: one moment they may be long, slender threads, at the next, or after a meal, blunt knobs.

The most remarkable, as well as the most interesting characteristic of the hydra is its power to overcome animals more active and muscularly stronger than itself. The surface layer of the body and feelers contain numerous nematocysts, popularly termed lasso-cells or nettling organs, about one two-hundredth of an inch in diameter. Each sac-like or bag-like cell is filled with a poisonous fluid, and coiled up in the fluid is a long thin filament in a state of tension. Groping about with its flexible arms, the hydra touches an animal swimming near it, the contact rupturing the cell, when both fluid and filament are forcibly ejected, the end of the filament entering the victim, and piercing it ready for the poison. While the hydras are not powerful enough to incommode the larger animals, *Daphnia*, *Cyclops* and newly hatched fish are readily overcome. This is well known to fish culturists who use every means to rid the tank of the pests.

The prey when mastered, is thrust by

the tentacles into the body cavity. On the inside are simple ciliated amoeboid cells into which particles of the food pass to be digested. The animal possesses no real stomach or intestine, the inside of the body-sack being practically a colony of amoebae which serve the same purposes.

The hydra propagate mostly by gemination or budding. Throughout the summer, buds are produced from the side of the animal, which increase in size, become open at the free end and gradually acquire feelers. The pedicel becomes thinner by degrees, and finally the young polp frees itself from the parent and begins an independent existence. As in other animals, the hydra also reproduces sexually from an egg, but the sexes are not separate. Budding, which is but a process of natural self-division, is carried on to a large extent, more individuals being produced in this way than from eggs. In autumn an egg is produced at the base of the body-sack, and these probably sexual eggs or resting bodies lie dormant until the next spring, when they are hatched, and a new generation produced. Like some other lower animals, the hydra may be multiplied by mechanical division. Cut an animal in two, or, slice into a number of rings, and each will eventually grow a crown of tentacles and become a perfect specimen. It was once claimed one could be turned inside out, and the former outside cells would perform the digestive functions, but this is now believed to be in error.

"Every good man has his Hobby, and every hard-working man should have one."
Athenaeum.

In the woods, a man casts off his years, as the snake his slough, and at what period soever of life is always a child.
Emerson.

THE AQUARIUM

Issued in the Interests of the Study, Care and Breeding of Aquatic Life

Published monthly except July and August at Hammond, Ind., by the Aquarium Societies of Brooklyn, Chicago, New York, Philadelphia, Boston, Milwaukee, Minneapolis

Send all manuscripts, exchanges, books for review, etc., direct to the Editor-in-Chief; remittances to the Treasurer; all other matter to the Business Manager.....

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VOL. I MARCH, 1913 No 10

COMMENT has been made upon the absence of articles pertaining to our old-time favorite, the goldfish. Although the goldfish holds the centre of the aquarium, in the popular mind, comparatively little copy has been received pertaining to them. On the other hand, papers on the native and tropical fishes, and other animals of the aquarium have been received from quite a number of authors. We hesitate to say that the interest in the exotic species is increasing more rapidly than in goldfish. Personally, our interest has been in the golden beauties, but we cannot overlook the unlimited maze of form, color and habits presented by the wild fishes, native and foreign.

It is our ambition to make THE AQUARIUM interesting and worth while to every student of aquatic life; the beginner; the goldfish specialist; the devotee of native fishes; the tropical fish enthusiast; the scientist and all

others. It is not the intention to allow any one class to preponderate. We must, however, be governed to a great extent by the character of voluntary contributions. If neglect is apparent in any phase of the general subject, the editor will be glad to receive suggestions. Either he will prepare a suitable paper, or refer the matter to a competent person for preparation. He, however, insists that communications be sent direct. Neither time nor energy is available to "run down" distant rumblings. The job of the editor is no sinecure, so the path of least resistance is chosen in all cases. We are working to serve "the greatest good to the greatest number." To this end, the active cooperation of all practical and intelligent aquarists is necessary. In the absence of expressions to the contrary, the editor must needs follow his own inclinations. To quote the immortal Abraham Lincoln, "I do the very best I know how — the very best I can; and I mean to keep doing so until the end. If the end brings me out all right, what is said against me won't amount to anything. If the end brings me out wrong, ten angels swearing I was right would make no difference."

With the April number, the first of the second volume, some slight typographical changes will be made. An innovation will be a frontispiece in color. Whether or not that will be a feature of all future numbers will depend upon the availability of suitable plates. Mr. Dorsey of Philadelphia has prepared an interesting paper on "A New Way to get Rid of an Old Pest," to which the article on the *Hydra* is offered as a preface. The articles on the native and tropical fishes, and Mr. Schenk's series on "The Aquarium" will be continued. Mr. Innes promises an illustrated article on the celestial telescope goldfish. *Comments and Queries* will appear as usual.

COMMENTS AND QUERIES

American catfish have been successfully introduced into the streams of Europe and the Hawaiian Islands.

The annual election of the Brooklyn Society resulted in a change of officers. We congratulate Dr. Schneider and his associates.

The Agassiz Association is looking for a retired aquarist of means and leisure who will be afforded splendid facilities for original work. Dr. Bigelow will be glad to furnish particulars.

J. Hope was the originator of the goldfish fancy in Philadelphia. He first introduced Japanese fish into that city, some twenty years ago, at a price within reach of all. The editor purchased his first goldfish from Mr. Hope about that time.

A curious result of the transport workers' strike in London last year was a scarcity of goldfish. These fish are brought to London by boat from Italy. Messrs. Cura & Sons were the only London dealers to supply their customers, having received approximately 41,000 goldfish during the month of June.

The New York Medical Society says all pets except goldfish carry danger from microbes.

"Can" the poor canary,
Disinfect the cat,
Put carbolic on the dog,
Fumigate the mat;
Quarantine the parrot,
Sterilize the mouse,
Gold-fish are the only pets
To keep around the house!
Chicago Evening American.

At the February meeting of the Philadelphia Society a number of splendid specimens of Celestial Telescopes and Lion-heads were exhibited.

We are glad to learn that The Aquarium Society of New York is in prosperous financial condition. A campaign for new members has been started. At a recent meeting a resolution was passed urging all members to subscribe for THE AQUARIUM. Good for New York! This is a move in the *right* direction, and should be followed by the other clubs. Interesting programs have been arranged for future meetings which will be announced from month to month in the magazine.

Many goldfish keepers use a feeding ring cut from sheet cork. This can be made very attractive by sowing timothy seed upon it, much as it is sown upon the grotesque red Chinese pottery, where it is used to simulate hair upon the head. The grass grows rapidly, and when it is about an inch high, the ring may be turned upside down. The grass makes a delicious and wholesome morsel for the fish. The other side may now be planted and a new crop grown.

Chas. Paxson, Philadelphia.

(Thus another item, hay, is added to the goldfish bill-of-fare. Ed.)

Minneapolis has adopted the coagulation method of purifying the city water. In this process the organic matter is destroyed by the use of sulphate of alumina and lime. The lime is necessary to the method to render the water alkaline, breaking the sulphate into alumina and sulphuric acid. The last step in the process is the removal of the impurities and chemical agents by sand filtration. Of course, it is impossible to remove all the chemicals by this method. The use of this water has resulted in severe losses to fish fanciers in that city. Mr. Tappan reports that he alone has lost several hundred valuable fish.

Comments and Queries.

(Continued.)

In conjunction with the Spring Flower Show of The Horticultural Society of Chicago, the Chicago Fish Fanciers Club will exhibit goldfish and tropical fish. The show will be held at the Art Institute, April 1st to 5th. The officers of the Institute and The Horticultural Society have cooperated with the club in every way, and have assigned prominent and ample space for the exhibit. This will be the first noteworthy exhibition of fishes in Chicago since the World's Fair in 1892.

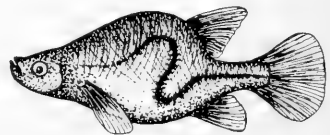
Plant fishes to get rid of your mosquitoes is the title of an excellent newspaper article from the pen of Rene Bache. The introduction of a few shiners and sunfish into a pond is considered to be more efficient than the usual oil method. Breezes blow the film of oil off the greater part of the water surface, and the "skeets" go on breeding as before. To the fish, the mosquito larva or "wiggler" is a dainty titbit to be devoured at every opportunity. Boat-flies, Water skaters, the larvae of certain beetles and the dragonfly are also deadly enemies of the wigglers of *Anopheles*, the malaria-carrying mosquito.

Do not feed your goldfish this month is the title of an absurd article that appeared a couple of months ago in the newspapers of several cities. It tells that during four months of the year, November to March, no food should be given! One fish to a quart of water is given as the proper proportion. The fish are to be kept, according to the author, in deep, not shallow, *bows*, and the water should be changed weekly in winter. He adds that goldfish given this care have been known to live eight to ten years. Poor fish! It is to be greatly regretted that such misleading information should be given the layman.

Editor, THE AQUARIUM: My *Barbus conchoni* are occasionally attacked by a bright red growth at the base of the pectoral or dorsal fin, usually the former. In one case the growth extended from the pectoral fin up to the gills and caused the intervening scales to stand out. These attacks yield to saltwater treatment in about four days. I use sea salt which is no doubt better than table salt for the treatment of all fish. I change it daily and make it strong enough so that the salty taste is just easily discernable. These are the only fish on which I ever saw this affection, and as they are in with a number of other kinds, it would seem possible that the malady is peculiar to the *Barbus* family.

If any of our scientific friends can tell me the cause of this trouble and what it is, I would be greatly obliged. A peculiar fact is that the affected fish show no other signs of ill health.

Wm. T. Innes, Jr.



A Deformed Guppy. Last summer I raised several hundred of *Girardinus Guppyi*, a native of Venezuela. Through injury or other cause unknown to me, one of the fry, a female, developed a singular deformity. The fish is slightly humpbacked, and being transparent, the backbone is plainly discernable in the form of the letter S as shown by my sketch. The fish seems to be in the best of health and has given birth to normal little ones as a well regulated *Guppyi* should. Frank L. Tappan.

This malformation has been noted in a number of other species. Ed.

"The beautiful is as useful as the useful."
Victor Hugo.

SOCIETY BULLETINS

Brooklyn Aquarium Society ❁ ❁ ❁

Regular meeting 4th Tues.
in every month except June,
July & Aug. at Fairchild Bldg
702 Fulton St., at 8 P. M.
Initiation Fee, \$1.00
Annual Dues, \$2.00

Chicago Fish Fanciers' Club

Regular meetings on the
Second Wednesday at 809-12
City Hall Square Building,
127-139 North Clark St., at
8.30 P. M. on Fourth Wed-
nesday where announced.

Initiation Fee, \$1.00
Annual Dues, \$1.00

The Aquarium Society ❁ ❁ ❁

Regular meetings on the
Second Thursday at the
German-American School,
Sherman Ave., Jersey City,
and on the Fourth Friday
at the American Museum of
Natural History, 77th St.
and Central Park West, New
York, each month except
July and August. Corre-
sponding membership \$1.00
Annually.
Initiation Fee, \$1 Dues \$2

Philadelphia Aquarium Society ❁ ❁ ❁

Regular meeting on the
Fourth Wednesday, at 1414
Arch Street
Initiation Fee, \$1.00 Annual
Dues, \$1.80. Corresponding
Membership \$1.00 Annually

Milwaukee Aquarium Society ❁ ❁ ❁

Regular meeting on First
Monday at 105 Grand Ave.
Initiation Fee, \$1. Dues, \$1.20

Minneapolis Aquarium Society ❁ ❁ ❁

Boston Aquarium Society ❁ ❁ ❁

Initiation Fee, \$1 Annual Dues, \$1

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Tuesday, March 25th:—Exhibition of Tropical Fishes.

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Wednesday, March 12th:—Business Meeting.

Wednesday, March 26th:—Meeting at residence of J. W. Gage,
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Thursday, March 13th:—Review of "The Blatter" by H. A. Richt-
berg. Exhibition of new fishes by J. A. Osborn. Exhibition
of fishes of British Guiana by Richard Dorn. Address
"Aquarium Management" by W. L. Brind.

Friday, March 28th:—Review of "Wochenschrift" by Richard Dorn.
Address "The Names of Fishes" by Rev. H. S. Coffin.

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Wednesday, March 26th:—Competition for Telescopes under one
year. Charles Paxson on "The Schlammbeisser:
A New Aquarium Scavenger."

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Monday, March 3rd:—Regular Meeting at 105 Grand Ave.

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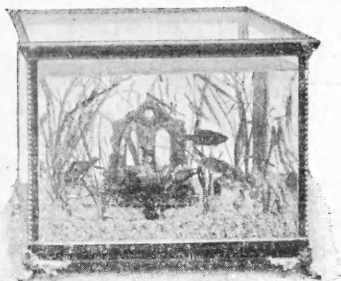
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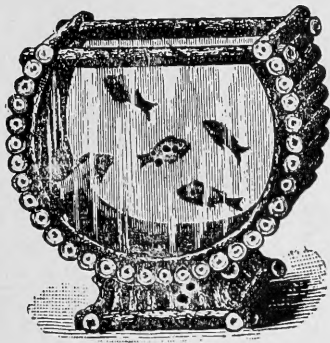
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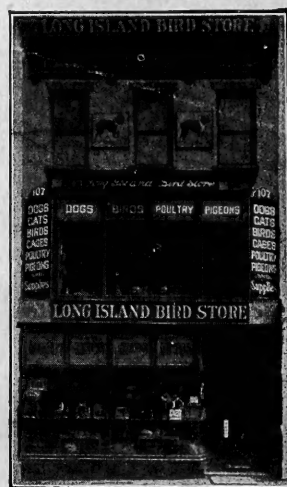
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